

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Rule 53(b) Continuation Application of USSN 09/421,331:

Yasuaki TANAKA et al.

Serial Number: Unassigned

Group Art Unit: 2851 (expected)

Filed: March 6, 2002

Examiner: H. NGUYEN (expected)

For: METHOD AND DEVICE FOR EXPOSURE CONTROL, METHOD AND DEVICE FOR EXPOSURE, AND METHOD OF MANUFACTURING OF DEVICE

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

March 6, 2002

Sir:

Prior to examination on the merits, please amend the above-identified application as follows:

IN THE ABSTRACT:

Delete the current Abstract and replace therewith the attached substitute Abstract.

IN THE SPECIFICATION:

Amend the specification as follows:

Please insert the following heading before the heading beginning at page 1, line 5 as follows:

BACKGROUND OF THE INVENTION

Please replace the heading beginning at page 1, line 5 with the following rewritten heading:

1. Field of the Invention

Please replace the heading beginning at page 1, line 19 with the following rewritten heading:

2. Description of the Related Art

IN THE CLAIMS:

Amend claims 42 and 61 as follows:

42. (Amended) A projection exposure method for transcribing a device pattern on a mask onto a substrate by means of a projection exposure apparatus as claimed in any one of claims 33 to 40.

61. (Amended) A device manufacture method containing the step of transcribing a device pattern on a mask onto a substrate by the projection exposure method as claimed in any one of claims 51 to 55.

REMARKS

Claims 1-61 are pending in this application, of which claims 42 and 61 have been amended.

No new claims have been added.

In view of the aforementioned amendments and accompanying remarks, claims 1-61 are in condition for examination, which action, at an early date, is requested.

Attached hereto is a marked-up version of the changes made to the specification by the current amendment. The attached page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**".

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees which may be due with respect to this paper, may be charged to Deposit Account No. 01-2340.

Respectfully submitted,

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Enclosures: Version With Markings To Show Changes Made
Substitute Abstract

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Abstract:

The Abstract has been amended as follows:

A method for exposure control [comprising] including the steps of measuring the change of the transmissivity or transmittance for the light incident to the projection optical system prior to the exposure operation effected by illuminating a pattern on a reticle to form an image of the pattern on a photosensitive wafer through the projection optical system, storing the measured change of the transmissivity, sequentially measuring the amount of the light incident to the projection optical system during the exposure operation, calculating the exposure light amount for the photosensitive wafer from the exposure light amount based on the stored change of the transmissivity, and integrating the exposure from the start of the exposure operation to terminate the exposure operation when the total exposure light amount has reached a predetermined value. The total exposure light amount for the wafer surface can be controlled even if the transmissivity of the projection optical system fluctuates.

In the Specification:

The specification has been amended as follows:

Before the paragraph beginning at line 5 of page 1, insert the following heading:

BACKGROUND OF THE INVENTION

Heading beginning at line 5 of page 1 has been amended as follows:

[TECHNICAL FIELD] 1. Field of the Invention

Heading beginning at line 19 of page 1 has been amended as follows:

[BACKGROUND TECHNOLOGY] 2. Description of the Related Art

In the Claims:

Amend claims 42 and 61 as follows:

42. (Amended) A projection exposure method for transcribing a device pattern on a mask onto a substrate by means of a projection exposure apparatus as claimed in any one of claims 33 to [41] 40.

61. (Amended) A device manufacture method containing the step of transcribing a device pattern on a mask onto a substrate by the projection exposure method as claimed in any one of claims [50] 51 to 55.

ABSTRACT OF THE DISCLOSURE

A method for exposure control including the steps of measuring the change of the transmissivity or transmittance for the light incident to the projection optical system prior to the exposure operation effected by illuminating a pattern on a reticle to form an image of the pattern on a photosensitive wafer through the projection optical system, storing the measured change of the transmissivity, sequentially measuring the amount of the light incident to the projection optical system during the exposure operation, calculating the exposure light amount for the photosensitive wafer from the exposure light amount based on the stored change of the transmissivity, and integrating the exposure from the start of the exposure operation to terminate the exposure operation when the total exposure light amount has reached a predetermined value. The total exposure light amount for the wafer surface can be controlled even if the transmissivity of the projection optical system fluctuates.